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PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

| EXAMINER | |
|---|---|
| QUARTERMAN, KEVIN J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2879 | |

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/790,174 | ASHIDA ET AL. | |
| | Examiner | Art Unit | |
| | Kevin Quarterman | 2879 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0304*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The following title is suggested: --HIGH-INTENSITY DISCHARGE LAMP WITH PARTICULAR METAL HALIDE GAS FILLING AND LIGHTING DEVICE--.

### *Claim Objections*

3. Claim 13 is objected to because of the following informalities: The claim recites the limitation "the outer jacket" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. The outer jacket is first cited in claim 12, but claim 13 does not depend upon claim 12. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 2, 12, and 14-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Hansler (US 4,935,668).

6. Regarding independent claim 2, Figure 4 of Hansler shows a discharge lamp including an arc tube (46), the arc tube comprising a discharge chamber having a pair of end sections; a pair of feedthroughs (38, 40), each of the feedthroughs being

hermetically sealed within one of the end sections of the discharge chamber, respectively; and a pair of electrodes (30, 32), each of the electrodes being connected to one of the feedthroughs, wherein the discharge chamber is filled with a discharge medium including a metal halide and a starting gas (col. 5, ln. 38-39), and wherein the metal halide comprises at least halides of Na, Tl, In, and Tm (col. 5, Table 1).

7. Regarding claim 12, Figure 4 of Hansler shows an outer jacket (48) hermetically enclosing the arc tube, and a pair of feeder members (42, 44), which are configured to support and position the arc tube relative to the outer jacket, wherein the pair of feeder members is sealed within an area of the outer jacket and is electrically connected to the feedthroughs.

8. Regarding claim 14, Hansler discloses a lighting circuit configured to supply a voltage to the lamp (col. 8, ln. 55-65). The Examiner notes that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim (MPEP § 2115). Thus, the lamp voltage properties when the lamp is lit have not been given patentable weight, since they do not add any structural limitation to the claim.

9. Regarding claim 15, Hansler discloses a lighting circuit configured to supply a voltage to the lamp (col. 8, ln. 55-65). The Examiner notes that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim (MPEP § 2115). Thus, the lighting circuit having a dimming operation has not been given patentable weight, since it does not add any structural limitation to the claim.

10. Regarding claim 16, Figure 4 of Hansler shows the end sections being tubular sections which have a constant diameter.

11. Regarding claim 17, Figure 4 of Hansler shows the central section provided with a given diameter.

12. Regarding claim 18, Figure 4 of Hansler shows the internal diameter of the central section being greater than the internal diameter of the end sections.

13. Regarding claim 19, Figure 4 of Hansler shows the central section being bulgy or ramp-like with increasing diameter including a most extended diameter.

14. Regarding claim 20, Figure 4 of Hansler shows an outer jacket (48) hermetically enclosing the arc tube.

15. Regarding claim 21, Figure 4 of Hansler shows a pair of feeder members (42, 44) configured to support and position the arc tube within an end of the outer jacket, the feeder member being sealed within an end of the outer jacket and electrically connected to the feedthroughs.

### *Claim Rejections - 35 USC § 103*

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 1, 3-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansler (US 4,935,668).

19. Regarding independent claim 1, Figure 4 of Hansler shows a discharge lamp including an arc tube (46), the arc tube comprising a translucent ceramic discharge chamber that defines a discharge volume, the chamber having a pair of end sections provided at both ends of a central section; a pair of feedthroughs (38, 40), each of the feedthroughs being hermetically sealed within one of the end sections respectively; and a pair of electrodes (30, 32), each of the electrodes comprising a tip that extends towards the central section and is connected to one of the feedthroughs, wherein the discharge chamber is filled with a discharge medium including a metal halide and a starting gas (col. 5, ln. 38-39), the metal halide comprising at least halides of Na, Tl, and Tm (col. 5, Table 1).

20. Hansler teaches each of the limitations of independent claim 1, as discussed earlier, but fails to exemplify a ratio of the mass MTm of the Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$.

21. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

22. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge lamp of Hansler with a discharge chamber having a discharge medium including a metal halide comprising a ratio of the mass MTm of Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$ for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

23. Regarding claim 3, Hansler teaches each of the limitations of independent 1, as discussed earlier, but fails to exemplify a total mass of the halides of Na, Tl, and Tm being greater than 90% by weight of the total mass M of the metal halide.

24. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

25. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge chamber of Hansler with a discharge medium including a total mass of halides of Na, Tl, and Tm being greater than 90% by weight of the total mass M of the metal halide for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in

the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

26. Regarding claim 4, Hansler teaches each of the limitations of independent 2, as discussed earlier, but fails to exemplify a total mass of the halides of Na, Tl, In, and Tm being greater than 90% by weight of the total mass M of the metal halide.

27. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge chamber of Hansler with a discharge medium including a total mass of halides of Na, Tl, and Tm being greater than 90% by weight of the total mass M of the metal halide for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

29. Regarding claim 5, Hansler teaches each of the limitations of independent claim 2, as discussed earlier, but further fails to exemplify a ratio of the mass MTm of the Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$.

30. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

31. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge lamp of Hansler with a discharge chamber having a discharge medium including a metal halide comprising a ratio of the mass MTm of Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$ for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

32. Regarding independent claim 6, Figure 4 of Hansler shows a discharge lamp including an arc tube (46), the arc tube comprising a discharge chamber having a pair of end sections; a pair of feedthroughs (38, 40), each of the feedthroughs being hermetically sealed within one of the end sections of the discharge chamber; and a pair of electrodes (30, 32), each of the electrodes being connected to one of the feedthroughs, wherein the discharge chamber is filled with a discharge medium including a metal halide and a starting gas (col. 5, ln. 38-39), and wherein the metal halide comprises at least halides of Na, Tl, In, and Tm (col. 5, Table 1).

33. Hansler teaches each of the limitations of independent claim 2, as discussed earlier, but fails to exemplify a ratio of the mass MTm of the Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$ and a total mass of the halides of Na, Tl, In, and Tm being greater than 90% by weight of the total mass M of the metal halide.

34. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

35. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge chamber of Hansler with a discharge medium including a metal halide comprising a ratio of the mass MTm of Tm halide to the total mass M of the metal halide being within a range of about $0.4 \leq MTm/M \leq 0.9$ and a total mass of the halides of Na, Tl, In, and Tm being greater than 90% by weight of the total mass M of the metal halide for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

36. Regarding claim 7, Hansler teaches each of the limitations of independent claim 2, as discussed earlier, but fails to exemplify a ratio of the sum of the mass MTm of the Tm halide and the mass MTl of the Tl halide and the mass MIn of the In halide to the total mass M of the metal halide being within a range of about $0.61 \leq (MTm + MTl + Min)/M \leq 0.9$, and the ratio of the mass of the In halide to the total mass M of the metal halide being within a range of about $0.01 \leq MIn/M \leq 0.1$.

37. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

38. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge chamber of Hansler with a discharge medium including a metal halide comprising a ratio of the sum of the mass MTm of the Tm halide and the mass MTl of the Tl halide and the mass MIn of the In halide to the total mass M of the metal halide being within a range of about $0.61 \leq (MTm + MTl + Min)/M \leq 0.9$, and the ratio of the mass of the In halide to the total mass M of the metal halide being within a range of about $0.01 \leq MIn/M \leq 0.1$ for improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

39. Regarding claim 8, Hansler teaches each of the limitations of independent claim 6, as discussed earlier, but fails to exemplify a ratio of the sum of the mass MTm of the Tm halide and the mass MTl of the Tl halide and the mass MIn of the In halide to the total mass M of the metal halide being within a range of about $0.61 \leq (MTm + MTl + Min)/M \leq 0.9$, and the ratio of the mass of the In halide to the total mass M of the metal halide being within a range of about $0.01 \leq MIn/M \leq 0.1$.

40. However, Hansler discloses the metal halide being a mixture of an amount in the range of 2mg to about 50mg and that the mixture is comprised of halides selected from group listed in Table (col. 5, ln. 51-54).

41. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge lamp of Hansler with a discharge chamber having a discharge medium including a metal halide comprising a

ratio of the sum of the mass MTm of the Tm halide and the mass MTl of the Tl halide and the mass MIn of the In halide to the total mass M of the metal halide being within a range of about $0.61 \leq (MTm + MTl + MIn)/M \leq 0.9$, and the ratio of the mass of the In halide to the total mass M of the metal halide being within a range of about $0.01 \leq MIn/M \leq 0.1$ for further improving the emission properties of the lamp, since where the general conditions of a claim are discloses in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05 II).

42. Regarding claim 9, Hansler discloses the metal halide further comprising at least one metal halide selected from the group of metals consisting of Ce, Pr, Ca, Cs, Li, Mg, and Rb (col. 5, Table 1).

43. Regarding claim 10, the Examiner notes that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim (MPEP § 2115). Thus, the claimed properties of the light emitted by the lamp have not been given patentable weight, since they do not add any structural limitation to the claim.

44. Regarding claim 11, the Examiner notes that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim (MPEP § 2115). Thus, the claimed properties of the light emitted by the lamp have not been given patentable weight, since they do not add any structural limitation to the claim.

45. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hansler (US 4,935,668) in view of Higashi (US 4,024,425).

46. Regarding claim 13, Hansler teaches each of the limitations of independent claim 2, as discussed earlier, but fails to exemplify an inner shroud disposed within the outer jacket and surrounding the arc tube, the shroud being made of glass.

47. Figure 1 of Higashi shows a discharge lamp including an outer jacket (1), which hermetically encloses the arc tube (2) and an inner shroud disposed within the outer jacket (1) and surrounding the arc tube, the shroud being made of glass (col. 2, ln. 5).

48. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the discharge lamp of Hansler with an inner shroud disposed within the outer jacket, as taught by Higashi, for supporting the arc tube.

***Conclusion***

49. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bergman (US 5,221,876) and (US 5,059,865) disclose xenon-metal halide lamps suited for automotive applications.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Quarterman
Examiner
Art Unit 2879

kq
30 September 2005

**Joseph Williams**
**Primary Examiner**
**Art Unit 2879**